Australian Bureau of Statistics

6525.0 - Experimental Estimates of Imputed Rent, Australia, 2013-14
Previous ISSUE Released at 11:30 AM (CANBERRA TIME) 16/12/2015

Summary

Introduction

INTRODUCTION

The ABS first released experimental household level estimates of imputed rent for owner-occupied dwellings and other tenure types not paying market rents in May 2008, derived from data reported in the 2003–04 and 2005–06 Survey of Income and Housing (SIH). The same methodologies were used for each subsequent SIH up to 2011–12.

The ABS has developed new experimental methodologies for estimating gross imputed rent for owner-occupied dwellings and for other subsidised tenure types to overcome limitations in the previous methodologies and improve household level imputed rent measures. This is part of a program to continually review and improve ABS outputs.

This information paper presents a detailed explanation of the new methodologies which have been implemented in the 2013–14 SIH. Estimates of imputed rent using the new experimental methodologies are presented in *Household Income and Wealth, Australia, 2013–14* (cat. no. 6523.0) for 2003–04 to 2013–14. These include imputed rent estimates for owner-occupied dwellings and the imputed benefit to tenants not paying market rents.

The ABS plans to use these new methodologies in future cycles of the SIH.

Details on the previous methodologies are provided in the first issue of this publication, available from the 'Past & Future Releases' tab.

The ABS welcomes comments from users on these new methodologies and the usefulness of the resulting experimental estimates for analytical purposes. Comments can be forwarded to: Director, Living Conditions Section, Australian Bureau of Statistics, Locked Bag 10, BELCONNEN ACT 2616. Alternatively, please email <living.conditions@abs.gov.au>.

BACKGROUND

Household income statistics compiled for individual households are critical to analysis and modelling that supports understanding of the socio-economic circumstances of different household types. They are also important in developing and evaluating policies on income support, income distribution and income taxation.

The ABS regularly collects detailed information on household income, expenditure and wealth in its SIH and Household Expenditure Survey (HES). SIH is conducted every two years, with the latest results published with respect to 2013–14. The HES is conducted every six years, with the latest survey relating to 2009–10. The SIH and HES have been conducted on an integrated basis in 2003–04 and 2009–10, and will be again for future HES cycles, the next being in 2015–16.

The ABS releases summary statistics on household income in Household Income and Wealth, Australia (cat. no. 6523.0). Confidentialised Unit Record Files (CURFs) from the surveys are also released to support comprehensive and detailed analyses by users.

The most restricted concept of income used in income analysis is the gross private income of individuals. While this measure is useful for certain purposes, it is generally of limited use when trying to understand people's broader economic wellbeing. Published ABS household income analysis, in accordance with international statistical standards, extends this income measure by:

- adding government transfers (both cash and in kind),
- deducting direct and indirect taxes,
- equivalising household income to adjust for household size, and
- adding an imputed rent value for the net benefits of home ownership and subsidised rent payments.

Imputed rent is included in both household income and expenditure. This conceptually treats owner-occupiers as if they were renting their home from themselves, thus simultaneously incurring rental expenditure and earning rental income.

Imputed rent is included in income on a net basis i.e. the imputed value of the services received less the value of the housing costs generally incurred by the household in their role as a landlord. Gross imputed rent is added to the expenditure of owner-occupiers, and any housing costs generally borne by a landlord are deducted (e.g. general and water rates, building insurance).

Including imputed rent in income for people living in different tenure types enables more meaningful analysis to be undertaken on their economic wellbeing and enables better analysis of changes over time in income levels and income distribution if tenures change.

CURRENT INTERNATIONAL STANDARDS

The international standards for household income and expenditure statistics include imputed rent for owner-occupied dwellings in the conceptual definitions of both household income and expenditure. The current international standards for household income and expenditure statistics were adopted by the 17th International Conference of Labour Statisticians (ICLS) in 2003.

The ICLS standards recommend that, when estimating consumption expenditure, the services of owner-occupied dwellings are valued as the gross rental equivalence. Costs that are normally paid by landlords such as property taxes, property and liability insurance, mortgage interest, water and sewerage charges, and repairs and maintenance of the dwelling should be excluded from household consumption expenditure. For the estimation of household income, the ICLS standards recommend that imputed rent be included on a net basis, with the housing costs normally paid by landlords being deducted from the gross rental equivalence.

Where rents paid on rented dwellings are subsidised, the international standards recommend that a rental benefit flow be estimated as the market rental value for an equivalent dwelling less the rent actually paid.

The standards also recommend that the estimates of imputed rent be separately provided to support different types of analyses.

The ABS treatment of imputed rent is consistent with the international standards which are also reflected in the Canberra Group Handbook on Household Income Statistics, Second Edition, 2011. Both the new and previous methodologies use a rental equivalence approach.

The international standards for the macro-economic statistics (System of National Accounts, 2008) recommend the inclusion of imputed rent for owner-occupied dwellings in the household sector estimates on a comparable basis to the ICLS standards for household level estimates.

REFERENCES

International Conference of Labour Statisticians 2003, Final Report of the 17th International Conference of Labour Statisticians, Geneva, 24 November to 3 December 2003.
UNECE (2011), Canberra Group Handbook on Household Income Statistics, Second Edition, ECE/CES/11, Geneva.

Data Sources

DATA SOURCES

The major data sources used to produce household level estimates in the new experimental imputed rent methodologies are:

- the ABS Survey of Income and Housing (SIH)
- the 2006 and 2011 Censuses of Population and Housing, and
- state and territory Valuers General dwelling sales data.

The ABS Household Expenditure Survey (HES) is also used for estimating some housing costs.

SIH

The SIH collects detailed information about the income, assets, liabilities and household characteristics of households in private dwellings throughout Australia.

In the new experimental methodologies, information reported in the SIH on the estimated value of owner-occupied dwellings, the actual rent paid by private market renters, as well as other dwelling and household characteristics, are used in estimating the gross imputed rent for owner-occupied dwellings and other households not paying

market rents. Housing costs reported in the SIH are also used in the estimation of net imputed rent.

Censuses of Population and Housing 2006 and 2011

The Census of Population and Housing counts the number of people in Australia on Census night as well as collecting information on their key characteristics, including information about the dwellings in which they live and rents paid.

Summary information on median rent by Collection District (CD) from the 2006 Census and Statistical Area 1 (SA1) from the 2011 Census are used in the estimation of gross imputed rent, as well as other dwelling characteristics and quintiles based on the Socio-Economic Index for Areas - Index of Relative Socio-Economic Advantage and Disadvantage.

State and territory Valuers General dwelling sales

Aggregated dwelling sales data from the state and territory Valuers General (VGs) departments has been used to provide an average (mean) dwelling price for the same geographical regions as the respective Census (CD or SA1). To ensure there were sufficient dwelling sales to produce reliable estimates, VGs dwelling sales prices for the financial year before and after each Census were used i.e. sales from 2005–06 and 2006–07 for the 2006 Census and 2010–11 and 2011–12 for the 2011 Census.

HES

HES data has been used in the compilation of net imputed rent estimates. The HES is conducted for a subset of households in the SIH sample in every third cycle of the SIH (that is, six yearly). Households selected to participate in the HES complete both the SIH and HES questionnaires. In the HES a personal diary is used, in which usual residents aged 15 years and over record their expenditure over two weeks.

Information reported in the 2003–04 and 2009–10 HES has been used to estimate average household expenditure on repairs and maintenance and house insurance costs for owner-occupiers, which are used to derive net imputed rent estimates.

Data items used by data source

Gross imputed rent

The data items used for estimating gross imputed rent in the new methodology are listed below. For each of the Census and VGs data items, there is an equivalent data item available from the SIH. These data items are described below.

Table 1: Data items by data source

Data item	Data item description	Data source
Dwelling price	Aggregate dwelling price data from actual dwelling sales	VGs
Dwelling price	Estimated sale price of owner-occupied dwellings	SIH
Landlord type	Type of landlord from whom the dwelling was rented, e.g. through a real estate agent, from an unrelated person not living in the same household, from a family member, or from a state/territory housing authority	Census and SIH
Market rent	Rents paid to real estate agents or an unrelated person not living in the same household (excludes owner/managers of a caravan park for imputed rent purposes)	Census and SIH
Dwelling size	Total number of bedrooms (used in the absence of a measure of the total floor area of the dwelling)	Census and SIH
Type of dwelling	Whether the dwelling was: a detached house; a semi-detached house or other dwelling; or a flat, unit or apartment	Census and SIH
State	The state/territory where the dwelling is located	VGs, Census and SIH
Section of state	Section of state: major urban, other urban, bounded locality, and rural balance	Census and SIH
Location	Statistical Area 1 (SA1) for data from the 2011 Census Collection District (CD) for data from the 2006 Census These equate to regions with between 200 and 800 people	VGs and Census
Socio-Economic Index for Areas (SEIFA)	The Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD) is used to indicate the socio-economic condition of the area where the dwelling is located. A higher score indicates that an area has attributes such as a relatively high proportion of people with high incomes or a skilled workforce. SEIFA IRSAD quintiles have been derived using the SEIFA index scores for each 2006 Census CD and 2011 Census SA1	Census and SIH

Net imputed rent

Most housing costs required to estimate net imputed rent for individual households are collected in the SIH. House insurance and repairs and maintenance costs are estimated from data collected in the 2003–04 and 2009–10 HES.

REFERENCES

Household Expenditure Survey and Survey of Income and Housing User Guide, Australia, 2009–10 (cat. no. 6503.0),
Survey of Income and Housing User Guide, Australia, 2013–14 (cat. no. 6553.0),
Socio-Economic Indexes for Areas (SEIFA), Australia (cat. no. 2033.0.55.001), and
National Statistics, Census Data, Census Reference and Information.

All references are available on the ABS website <https://www.abs.gov.au>.

Methodologies

INTRODUCTION

Different methodologies are used to produce the new experimental household level estimates of gross and net imputed rent for:

- owner-occupied dwellings, and
- other tenure types.

This section provides a step by step explanation of how household level estimates of gross and net imputed rent have been created for these tenure types.

The market value of the rental equivalent for owner-occupied dwellings can be estimated in a number of ways (e.g. self-report, stratification and regression approaches). The statistical office of the European Union, Eurostat, has reviewed rental equivalence methods and recommended regression or stratification techniques in countries where representative market rates can be obtained (Eurostat 2006). Australia has a well-established private rental market, and this data is the basis for both the previous and new methodologies. A non-parametric stratification technique is used to estimate the market value of the rental equivalent in the new methodology for owner-occupied dwellings. It replaces the previous methodology which used hedonic regression.

The new methodologies have been developed to improve household level estimates of imputed rent, particularly for high value dwellings. The previous methodologies underestimated gross imputed rent for high value dwellings due to the small number of rental dwellings in the Survey of Income and Housing (SIH) with similar characteristics and location on which to base rental estimates. An extrapolation method was used to account for the sparse number of high value rental properties in the previous methodology, but it did not fully compensate for the limitations in the rental sample data.

The net imputed rent for owner-occupied dwellings has been estimated as:

- the market value of the rental equivalent (referred to as gross imputed rent); less
- the housing costs normally paid by landlords i.e. general rates, water and sewerage rates, mortgage interest, building insurance, repairs and maintenance.

The imputation of gross and net imputed rent includes other housing tenures in order to value the in-kind benefit conferred to households paying subsidised rent (e.g. tenants of an employer or of a state/territory housing authority) and households occupying their dwelling rent-free. The gross imputed rent for these housing tenures has been estimated using the same stratified rental data from the Census of Population and Housing as used for owner-occupiers. In deriving net imputed rent for these tenure types, actual rent paid is the major housing cost deducted.

GROSS IMPUTED RENT FOR OWNER-OCCUPIED DWELLINGS

Overview

The new methodology for estimating gross imputed rent for individual owner-occupied dwellings uses the relationship between dwelling price (available from Valuers General data) and the market rent that a dwelling would receive (available from Census data).

By merging aggregated Valuers General (VGs) data and Census dwelling data for the smallest available geographic area, rental yields based on average dwelling prices and reported rents have been calculated for each rental dwelling in the Census. These rental yields (termed *base rental yields)* underpin the new methodology.

The new methodology takes account of differences in the value of dwellings and market rents due to location, number of bedrooms, type of dwelling and SEIFA IRSAD, to produce an estimate of a market rent for each owner-occupied dwelling in the SIH.

Appendix 1 summarises the detailed steps described below to produce gross imputed rent estimates for owner-occupied dwellings.

Detailed methodology

Produce base rental yields for owner-occupied dwellings

Census data from 2011 was used to provide market rents paid by households by type of dwelling for each SA1 in Australia in scope of the SIH.

VGs data was used to provide an average (mean) dwelling price for each SA1 in Census 2011. To ensure there were sufficient dwelling sales to produce reliable estimates, VGs dwelling sales prices for the financial year before and after the Census were used i.e. 2010–11 and 2011–12 for the 2011 Census. To ensure the dwelling sales prices were representative of the region, an average price was only calculated if there were at least five dwelling sales in the SA1 in the two year period. For the 2011 Census, approximately 16% of SA1's were excluded due to an insufficient number of dwelling sales. This has negligible impact due to the broader stratifications applied to the data, as explained in Step 1.2 below.

To produce historical imputed rent estimates using the new experimental methodology, CD Census 2006 data and VGs dwelling sales data from 2005–06 and 2006–07 were also used.

The following three steps were used to calculate a *base rental yield* to produce gross imputed rent estimates for individual dwellings in the SIH.

Step 1.1 – Calculate a preliminary rental yield for each SA1 or CD

The first step was to pool VGs dwelling sales and Census rental data. A *preliminary rental yield* was allocated to each Census rental dwelling by dividing its reported rent by the mean VGs dwelling price from sales in the SA1 or CD where the Census dwelling was located. If no mean dwelling price was available because there were less than five dwelling sales in the relevant SA1/CD, the rental records for that region were excluded.

Step 1.2 – Stratify Census rental records

Census rental records, with the preliminary rental yield added to each record, were then stratified using the following variables:

- State/territory (eight categories)
- Section of state (four categories)
- Dwelling type (up to three categories)
- Number of bedrooms (up to four categories)
- SEIFA IRSAD quintiles (five categories).

The final strata were determined based on analysis that there were sufficient dwellings to support the estimates. For example, separate houses in major urban areas were the only dwelling types that used all four possible categories of number of bedrooms. Due to the limited number of apartments and semi-detached dwellings with four or more bedrooms, the highest category for number of bedrooms in these dwelling types was '3 or more'. Appendix 3 shows the strata created for each of the states and territories.

Table A1 in Appendix 3 shows the 100 strata created in each of the six states. Twenty categories based on different combinations of section of state, dwelling type and number of bedrooms were created for each of the five SEIFA IRSAD quintiles.

The territories have fewer strata. In the Northern Territory there were 70 strata because section of state was reduced to two categories (major/other urban and bounded locality/ rural balance) (see table A2). In the Australian Capital Territory, there were 55 strata because section of state was not used (table A3).

The total number of strata for the entire SIH population was therefore 725.

Step 1.3 – Estimate a final base rental yield for each stratum

The third step was to create a *final base rental yield* for each of the 725 strata. The *preliminary rental yields* for the Census rental records in each stratum (from Step 1.2), were ranked from highest to lowest. The *final base rental yield* for each stratum was the median preliminary rental yield for that stratum.

To ensure rental yields were representative for each stratum a median was only calculated if there were at least five Census rental records in the stratum. If there were insufficient records, the rental yield was imputed using a rental yield from an adjacent SEIFA IRSAD quintile with the same dwelling characteristics.

Estimate gross imputed rent for dwellings in base SIH cycles

Base SIH cycles are those enumerated at around the same time as the Census i.e. SIH 2005–06 (2006 Census) and SIH 2011–12 (2011 Census).

As the SIH contains all of the stratification variables listed in Step 1.2, each owner-occupied dwelling in the sample can be matched to a unique stratum. The gross imputed rent for each owner-occupied dwelling in the base SIH cycles was calculated as the *final base rental yield* for the relevant stratum of the dwelling, multiplied by the estimated sale price of the dwelling reported in the SIH.

Dwellings with an extremely low estimated sale price reported in the SIH, resulted in an unreasonably low estimate of gross imputed rent. A minimum value was therefore applied, equal to the market rent at the top of the first percentile for the relevant state in the Census. This ensured the gross imputed rent estimate reflected reasonable market costs associated with renting a property.

Produce intercensal rental yields for owner-occupied dwellings

The relationship between rents and dwelling prices can vary over time as prices change at different rates. To reflect the relative differences between the change in dwelling prices compared to rents, an adjustment factor was created using data reported in the intercensal SIH cycles for which gross imputed rent was to be calculated (SIHs 2003–04, 2007–08, 2009–10 and 2013–14).

As there is significant variation in the change in rents and house prices between states and territories, a separate adjustment factor was created for each state and territory. Appendix 2 provides further analysis underpinning the development of the intercensal adjustment factors.

There were three steps to produce the intercensal rental yields.

Step 2.1 – Calculate mean rental yields for each state/territory using SIH data

For each SIH from 2003–04 to 2013–14, a *mean rental yield* was calculated for each state/territory as the mean rent reported by market renters divided by the mean value of owner-occupied dwellings.

Step 2.2 – Calculate rental yield adjustment factors for intercensal SIH cycles

A *rental yield adjustment factor* was calculated for each of the non-base SIH cycles as its *mean rental yield* divided by the *mean rental yield* for the relevant base SIH cycle (2005–06 or 2011–12) (from Step 2.1).

SIH 2005–06 is the base cycle for SIHs 2003–04, 2007–08 and 2009–10. For SIH 2013–14, the base cycle was SIH 2011–12. SIH 2011–12 will be used as the base cycle until the 2016 Census data is available and new base rental yields can be calculated. It is expected these will be available for SIH 2017–18.

Step 2.3 – Calculate strata rental yields for intercensal SIH cycles

An *adjusted rental yield* was calculated for each stratum in each intercensal SIH, as the *final base rental yield* of the stratum (from the process outlined in step 1) multiplied by the *rental yield adjustment factor* (step 2.2) for the relevant state/territory of the stratum.

Estimate gross imputed rent for intercensal SIH cycles

Gross imputed rent for the intercensal SIH cycles was calculated for each owner-occupied dwelling as the *adjusted rental yield* (Step 2.3) for the relevant stratum of the dwelling, multiplied by the estimated sale price of the dwelling reported in the SIH.

NET IMPUTED RENT FOR OWNER-OCCUPIED DWELLINGS

To calculate the net imputed rent for owner-occupied dwellings, the following housing costs normally paid by landlords were subtracted from the gross imputed rent:

- body corporate payments
- general and water rates
- the interest component of repayments of loans that were obtained for the purposes of purchasing or building the dwelling
- house insurance, and
- repair and maintenance costs.

All housing costs were net of refunds or subsidies received from outside the household.

All of the relevant housing costs are collected in the SIH except for expenditure information on house insurance and repairs and maintenance. Household Expenditure Survey (HES) 2003–04 and 2009–10 data were used to estimate these expenditures.

Average repair and maintenance costs were calculated for owner-occupiers, stratified by the number of bedrooms. The relevant average expenditure was allocated to each owner-occupied dwelling in the SIH. In non-HES years, these costs were extrapolated using the published ABS Consumer Price Index for 'House repairs and maintenance'.

Stratification by number of bedrooms was also used to calculate an average cost of house insurance using HES data. Average house insurance costs for the relevant number of bedrooms were allocated to all owner-occupiers in the SIH based on HES data. The ratio between expenditure on house building insurance and home contents insurance for all households was applied to any households where these amounts were unable to be collected separately. In non-HES years, expenditure was estimated by inflating the most recent HES data using the published Consumer Price Index for 'Insurance services'.

GROSS IMPUTED RENT FOR OTHER TENURE TYPES

Overview

Some renters do not pay a market rent, effectively receiving a subsidy for their living costs. Typically, the subsidised rent is made available by government state and territory housing authorities, employers or a family or friend, collectively termed, ‘Other tenure types’.

The value of this subsidy can be estimated by calculating the gross imputed rent (i.e. market rent) for the property and then deducting the actual rent paid by the tenant (reported in the SIH).

The methodology for calculating gross imputed rent for owner-occupied dwellings is not suitable for other tenure types as there is no estimate in the SIH of the value of these dwellings.

Therefore, a different approach has been developed that uses the strata developed for imputing the rent for owner-occupied dwellings.

Appendix 1 summarises the steps described below to produce gross imputed rent estimates for other tenure types.

Estimate gross imputed rent for other tenure types

An imputed market rent value was calculated for other tenure types using the median Census rent for the relevant stratum of the subsidised rental dwelling.

For intercensal SIHs, the estimates have been indexed to account for changes in rent over time. The indexation method is similar to that used for owner-occupied dwellings i.e. the percentage difference between the mean rent from the SIH conducted at the time of the last Census and the mean rent for the SIH cycle in question.

Not all households identified in the SIH as potentially living in a subsidised rental dwelling, actually receive any discount on their rent. Therefore, if the estimated gross imputed rent was lower than the actual reported rent, the reported rent was used for the gross imputed rent estimate.

This methodology has only been implemented for estimating subsidised rent for SIH 2013–14 and will be used for subsequent surveys. For all cycles up to SIH 2011–12, the gross imputed rent for other tenure types remains unchanged from previously published estimates that used the hedonic regression model. For these other tenure types, the new methodology has minimal impact on the estimates (2% in 2011–12).

NET IMPUTED RENT FOR OTHER TENURE TYPES

For other housing tenure types, the housing costs subtracted from gross imputed rent to derive net imputed rent are outlined in table 1.

Table 1. Housing costs subtracted from gross imputed rent, other tenure types

Housing tenure	Housing costs (net of refunds)
Subsidised renter(a)	Reported rent paid.
Occupied rent-free	Body corporate fees; and general and water rates payments.
Rent-buy/shared equity scheme	Reported rent paid; body corporate fees; general and water rates payments; the interest component of repayments of loans that were obtained for the purposes of purchasing or building the dwelling; house insurance; and repair and maintenance costs.
Life tenure scheme	Body corporate fees and general and water rates payments.

(a) Includes households renting from: a state/territory housing authority; a parent or other relative not living in the same household; an employer; a housing cooperative or community/church group.

For each of the housing tenures described in table 1, any refunds or subsidies received for rent payments were implicitly accounted for in the estimation of net imputed rent. For consistency across all housing tenures, the reported values of any rental refunds or subsidies received by private market renters have been included in the estimates of net imputed rent.

For tenants of state/territory housing authorities, the mean difference between the initial gross imputed rent estimates and the reported rent paid were compared by state with the mean weekly rental subsidy published in the Housing assistance in Australia reports (AIHW).

For SIH 2013–14 it was found that the initial net imputed rent estimates from this study understated the mean benefit in NSW, Qld and NT, and overstated it in other states and the ACT. Therefore, the net imputed rent for public tenants was benchmarked to the AIHW published state mean weekly rental subsidies using a multiplicative adjustment.

REFERENCES

ABS, Socio-Economic Indexes for Areas (SEIFA), Australia (cat. no. 2033.0.55.001)
AIHW, Housing assistance in Australia, 2015
Eurostat 2006, 'HBS and EU-SILC Imputed Rent', Meeting of the Working Group on Living Conditions, Luxembourg, 15–16 May 2006

Impact on imputed rent estimates

COMPARISON OF THE NEW AND PREVIOUS EXPERIMENTAL METHODOLOGIES

The effectiveness of approaches taken to impute a market rent for individual owner-occupied dwellings is dependent on the availability of data on price determining property characteristics in the private rental market. Data are not available in SIH at the individual dwelling level to better define location in terms of attributes such as views or beach frontage and proximity to employment, transport, and shops/services. Data are also not available on the value of rented dwellings, nor for some important physical characteristics of the dwellings such as outer-wall construction, availability of garaged or off-street parking, size of block or number of bathrooms.

In the previous methodology, hedonic regression was used to estimate the market value of the rental equivalent for owner-occupied dwellings and other subsidised tenure types. Data from the SIH on reported rents paid by private market renters was regressed on the characteristics of their rented dwellings e.g. location and dwelling structure. The estimated coefficients were then applied to the corresponding characteristics of owner-occupied and other subsidised tenure dwellings to produce imputed values of the gross rental equivalence for these dwellings.

A shortcoming of the hedonic regression rental equivalence approach is that reliable results cannot be produced when rental markets are limited or do not exist (recognised in the Canberra Group Handbook on Household Income Statistics). In the SIH, rental dwellings are very limited for high value housing stock. An extrapolation method was used to partially compensate for this problem but further analysis indicated that it resulted in a substantial underestimate of the imputed rent for these owner-occupied dwellings.

The inclusion of dwelling price data in the new experimental methodology for owner-occupied dwellings overcomes this problem, as well as taking better account of the quality differences that are likely to exist between many owner-occupied and rental dwellings with other similar characteristics. For example, owner-occupied dwellings may generally have higher quality fittings or building materials, or be maintained to a higher standard than many rental dwellings and this would be expected to be reflected in the value of the dwelling and in the market rent it would be likely to attract.

EXPERIMENTAL ESTIMATES OF IMPUTED RENT FOR OWNER-OCCUPIED DEWLLINGS

The distribution of gross imputed rent has changed between the previous and new experimental methodologies. As shown in Graph 1, the new methodology has resulted in a more dispersed distribution.

In the previous methodology, hedonic regression could only be used when there were sufficient rental properties to use the regression model, which was at a much lower value than rents imputed using the new methodology.

Graph 1. Distribution of gross imputed rent for owner-occupied dwellings, new and previous experimental methodologies, 2011–12

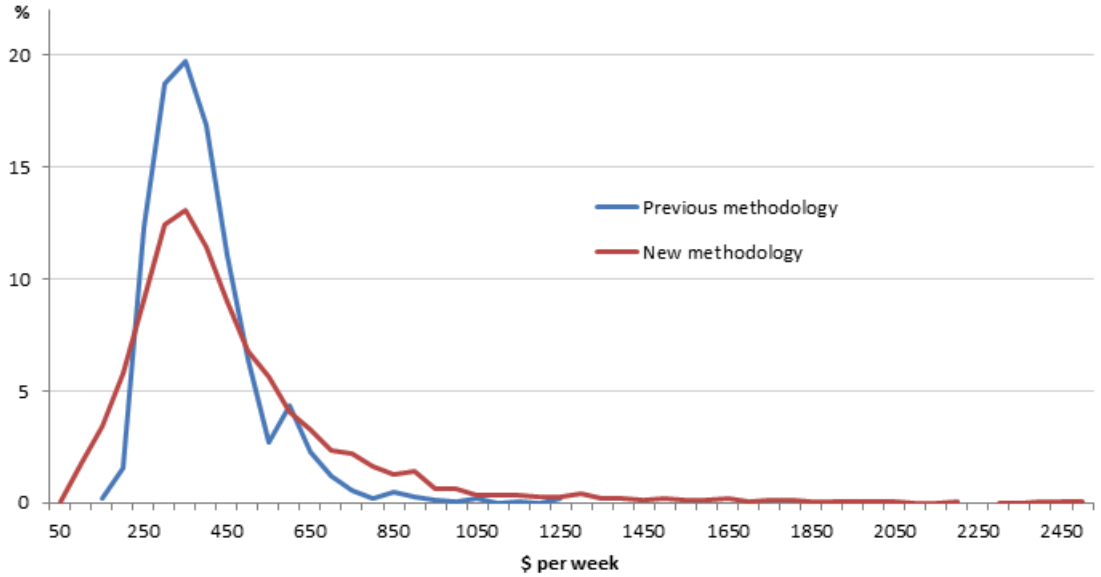


Table 1 shows the impact of the new experimental gross imputed rent methodology for selected percentiles for owner-occupied dwellings. The total average increase for all households between the new and previous methodologies is 16%, due mostly to the better estimation of market rents for higher value dwellings. The gross imputed rent at the 80th and 90th percentiles is more that 25% higher in the new methodology compared to the previous methodology.

Table 1. Gross imputed rent at top of selected percentiles for owner-occupied dwellings, new and previous experimental methodologies, 2011–12

Percentiles	New methodology $ per week	Previous methodology $ per week	Difference $ per week	Difference %
P10	192	239	-47	-20
P20	249	267	-18	-7
P30	290	293	-3	-1
P40	328	319	9	3
P50	367	343	24	7
P60	414	370	45	12
P70	476	402	74	18
P80	566	446	120	27
P90	742	558	184	33
All households	***445***	***374***	***71***	***19***

Table 2 shows the impact of the new experimental methodology on the equivalised disposable household income (EDHI) including imputed rent for owner-occupied dwellings. As the housing costs used to calculate net imputed rent have not changed in the new model, the impact is solely due to the change in gross imputed rent. In 2011–12, the EDHI (including imputed rent) increased by an average of $43 per week (4%) for all households. The greatest impact was on the highest quintile (up by 6%).

Table 2. Distribution of equivalised disposable household income (incl. imputed rent), new and previous experimental methodologies, 2011–12

	New methodology $ per week	Previous methodology $ per week	Difference $ per week	Difference %
Mean income				
Lowest quintile	448	446	2	0
Second quintile	713	694	18	3
Third quintile	923	893	29	3

Fourth quintile	1 202	1 156	46	4
Highest quintile	2 118	1 996	121	6
All households	***1 081***	***1 037***	***43***	***4***
Income at top of selected percentiles				
P10	496	500	-4	-1
P20	611	600	10	2
P30	710	695	15	2
P40	812	792	20	3
P50	920	889	31	3
P60	1 041	1 005	36	4
P70	1 189	1 149	40	3
P80	1 419	1 358	61	4
P90	1 773	1 702	72	4

Table 3 shows that the new experimental methodology for calculating gross imputed rent has a similar impact on both gross imputed rent and EDHI (including imputed rent) estimates for all SIH cycles from 2003–04 to 2011–12.

Table 3. Comparison of income estimates for owner-occupied dwellings, new and previous methodologies

	Mean gross imputed rent				Mean equivalised disposable household income (incl. imputed rent)			
	New methodology	Previous methodology	Difference		New methodology	Previous methodology	Difference	
Period	$ per week	$ per week	$ per week	%	$ per week	$ per week	$ per week	%
2003–04	317	264	53	20	827	795	33	4
2005–06	334	286	48	17	908	878	30	3
2007–08	382	317	65	21	1 058	1 019	39	4
2009–10	418	357	61	17	1 053	1 016	37	4
2011–12	445	374	71	19	1 081	1 037	43	4
2013–14	491	na	na	na	1 204	na	na	na

REFERENCES

UNECE (2011), **Canberra Group Handbook on Household Income Statistics, Second Edition**, ECE/CES/11, Geneva.

Historical data

HISTORICAL DATA

For the Survey of Income and Housing (SIH) 2013–14 imputed rent estimates have been produced using only the new experimental methodologies.

Revised household level historical estimates for each SIH between 2003–04 and 2011–12 have also been produced. There are three ways by which data analysts can access these new experimental estimates of imputed rent for owner-occupied dwellings.

Firstly, aggregate estimates using the new methodology have been published in Data cube 13 - Imputed Rent, available from the Downloads tab of *Household Income and Wealth, Australia, 2013–14* (cat. no. 6523.0).

Secondly, the new estimates will be available via customised data requests from data on the ABS internal main unit record files (MURFs) for each SIH between 2003–04 and 2011–12. This is a charged service.

Thirdly, the ABS publishes Expanded and Basic Confidentialised Unit Record Files (CURFs) for each SIH. For more information see Survey of Income and Housing, Australia: CURFs <relevant year> (cat. no. 6541.0.30.001).

For each SIH from 2003–04 to 2011–12, CURF users will be able to derive a modified estimate of gross imputed rent for individual owner-occupied dwellings using the new experimental methodology.

A data cube is available under the ‘Downloads’ tab of this publication that provides rental yields for strata created only using data items available on the relevant CURFs. It also provides a minimum market rent estimate for each state for each SIH year. Section B of Appendix 3 lists the CURF strata for each state and territory.

To create a new gross imputed rent estimate for an owner-occupied dwelling in the historical SIHs, CURF users must use the stratification variables available from the relevant CURF to identify the rental yield. The gross imputed rent estimate is calculated as the estimated sale price of the individual owner-occupied dwelling multiplied by the rental yield for that SIH cycle. Estimates produced that are below the state minimum should be imputed with the minimum market rent for the relevant state/territory (available on the data cube, as outlined above).

The new CURF gross imputed rent estimates that are produced using this method have been aligned with the Main Unit Record File (MURF) estimates for the relevant state and territory in each SIH by adjusting the rental yields for each stratum by the amount necessary to achieve alignment.

A comparison of the resulting household level estimates on each of the historical CURFs indicated that for most households, the difference between the CURF and MURF gross imputed rent estimates was less than 10%.

The housing costs deducted from gross imputed rent to calculate net imputed rent estimates for owner-occupied dwellings have not changed. Therefore, revised estimates of net imputed rent using the new methodology can be calculated by deducting the original housing costs for each dwelling from the revised gross imputed rent estimate for that dwelling.

Gross and net imputed rent estimates for other tenure types will not be revised for SIH 2003–04 to 2011–12 because the impact of the new methodology is minimal on these estimates e.g. 2% in 2011–12.

REFERENCES

UNECE (2011), Canberra Group Handbook on Household Income Statistics, Second Edition, ECE/CES/11, Geneva.

About this Release

This Information Paper provides a detailed explanation of new experimental methodologies for producing household level estimates of imputed rent for owner-occupied dwellings and other tenure types receiving subsidised housing, in the 2013-14 Survey of Income and Housing.

The ABS welcomes comments from users on the new methodologies and the usefulness of the resulting estimates for their analytical purposes.

Explanatory Notes

Glossary

GLOSSARY

Assets

An entity of a financial or non-financial nature, owned by the household or its members, and from which economic benefits may be derived by holding or use over a period of time.

Australian Statistical Geography Standard (ASGS)

The ASGS came into effect in July 2011 to replace the Australian Statistical Geographical Classification (ASGC). The ASGS provides a common framework of statistical geography used by the ABS to enable the publication of statistics that are comparable and spatially integrated. Its purpose is to outline the conceptual basis of Mesh Blocks, the regions of the main structure and the Greater Capital City Statistical Areas and their relationships to each other. For more information refer to Australian Statistical Geography Standard (ASGS): Volume 1 - Main Structure and Greater Capital City Statistical Areas, July 2011 (cat. no. 1270.0.55.001) and <https://www.abs.gov.au/geography>.

Australian Standard Geographical Classification (ASGC)

The ASGC was replaced by the Australian Statistical Geography Standard (ASGS) in July 2011. For more information refer to Australian Standard Geographical Classification (ASGC) (cat. no. 1216.0) and <https://www.abs.gov.au/geography>.

Balance of State

Under the Australian Standard Geographical Classification (ASGC), Balance of State represents each state or territory not defined as Capital City.

Body corporate fees

Compulsory payments to the governing body of a block of home units or apartments. The governing body consists of home unit owners or their representatives.

Capital city

Capital city under the Australian Statistical Geography Standard (ASGS) refers to Greater Capital City Statistical Areas (GCCSAs) as defined in the Australian Statistical Geography Standard (ASGS): Volume 1 - Main Structure and Greater Capital City Statistical Areas, July 2011 (cat. no. 1270.0.55.001). For the Australian Capital Territory, the estimates relate predominantly to urban areas. All of the Australian Capital Territory is defined as capital city for this publication.

Capital city under the Australian Standard Geographical Classification (ASGC) refers to Australia's six State capital city Statistical Divisions and the Darwin Statistical Division as defined in the Australian Standard Geographical Classification (ASGC) (cat. no. 1216.0). For the Australian Capital Territory the estimates relate predominantly to urban areas, and all of the Australian Capital Territory is defined as a capital city for this publication. Capital city estimates for the Northern Territory are not available on the CURF.

Collection District

Census Collection District (CD) is the smallest geographic area defined in the Australian Standard Geographical Classification (cat. no. 1216.0).

Consumer Price Index (CPI)

A general measure of price inflation for the household sector in Australia. Specifically, it provides a measure of changes, over time, in the cost of a constant basket of goods and services acquired by capital city households in Australia.

Disposable income

Gross income less income tax, the Medicare levy and the Medicare levy surcharge i.e. remaining income after taxes are deducted, which is available to support consumption and/or saving. Income tax, Medicare levy and the Medicare levy surcharge are imputed based on each person's income and other characteristics as reported in the survey. Disposable income is sometimes referred to as net income.

Dwelling

Defined as a suite of rooms contained within a building which are self-contained and intended for long-term residential use. To be self-contained the suite of rooms must possess cooking and bathing facilities as building fixtures. Examples of types of dwelling include: separate house; semi-detached, row or terrace house or townhouse; flat, unit, or apartment; and other dwelling, including caravan, cabin, houseboat, and house or flat attached to a shop.

Dwelling structure

The dwelling structure type is determined by the structure of the building that contains the dwelling. Households belong to one of four dwelling categories:

- separate house
- semi-detached, row or terrace house or townhouse
- flat, unit, or apartment and
- other dwelling, including caravan or cabin in a caravan park, houseboat in a marina, caravan not in a caravan park, houseboat not in a marina and house or flat attached to a shop

Equivalised disposable household income

Disposable household income adjusted using an equivalence scale. For a lone person household it is equal to disposable household income. For a household comprising more than one person, it is an indicator of the disposable household income that would need to be received by a lone person household to enjoy the same level of economic wellbeing as the household in question. For more information on the process of equivalisation, see the Survey of Income and Housing, User Guide, Australia, 2013 - 14 (cat. no. 6553.0).

Flat, unit or apartment

Includes all self-contained dwellings in blocks of flats, units or apartments. These dwellings do not have their own private grounds and usually share a common entrance foyer or stairwell. This category includes houses converted into flats and flats attached to houses such as granny flats. A house with a granny flat attached is regarded as a separate house.

Gross imputed rent

The estimated market rent that a dwelling would attract if it were to be commercially rented.

Gross income

Income from all sources, whether monetary or in kind, before income tax, the Medicare levy and the Medicare levy surcharge are deducted.

Gross private income

Current receipts from private organisations and other households, including wages and salaries, income from own business, superannuation, workers' compensation, income from annuities, interest, dividends, royalties, income from rental properties, scholarships and child support.

Household

A person living alone or a group of related or unrelated people who usually live in the same private dwelling.

Housing costs

Housing costs for the purposes of calculating net imputed rent for owner-occupiers in this study comprise:

- rates payments (general and water)
- body corporate fees
- the interest component of mortgage and unsecured loan repayments, where the loan was obtained for the purposes of purchasing or building
- rent payments
- house insurance costs
- repair and maintenance costs.

Income

Income consists of all current receipts, whether monetary or in kind, that are received by the household or by individual members of the household, and which are available for, or intended to support, current consumption. Income includes receipts from:

- wages and salaries and other receipts from employment (whether from an employer or own incorporated enterprise), including income provided as part of salary sacrificed and/or salary package arrangements
- profit/loss from own unincorporated business (including partnerships)
- net investment income (interest, rent, dividends, royalties)
- government pensions and allowances (includes pensions and allowances from Commonwealth and State and Territory governments as well as pensions from overseas)
- private transfers (e.g. superannuation, workers' compensation, income from annuities, child support, and financial support received from family members not living in the same household).

Gross income is the sum of the income from all these sources before income tax, the Medicare levy and the Medicare levy surcharge are deducted. Other measures of income are Disposable income and Equivalised disposable household income.

Note that child support and other transfers from other households are not deducted from the incomes of the households making the transfers.

Landlord type

For renters, the type of entity to whom rent is paid or with whom the tenure contract or arrangement is made. Renters are classified to one of the following categories:

- state/territory housing authority-where the household pays rent to a state or territory housing authority or trust
- private landlords-where the household pays rent to a real estate agent or to another person not in the same household
- person in the same household-where the unit pays rent to a person who resides in the same household
- other-where the household pays rent to the owner/manager of a caravan park, an employer (including a government authority), a housing cooperative, a community or church group, or any other body not included elsewhere.

Life tenure scheme

A lease arrangement in which the tenant has the right to occupy the dwelling for an indefinite or unspecified period.

Market rent

The rent that a dwelling would attract if it was commercially rented.

Market renter

For the purpose of this study, a market renter is a household that rents its dwelling from a real-estate agent, an unrelated person not living in the same household, or the owner/manager of a caravan park.

Mortgage

A mortgage is a loan taken out using the usual residence as security. An owner with a mortgage must still owe money from such a loan.

Net imputed rent

Gross imputed rent less housing costs. Net imputed rent is an estimate of the value of housing services that households receive from home ownership or by households paying subsidised rent or occupying their dwelling rent free. Housing costs for the purpose of calculating net imputed rent for owner-occupiers comprise:

- rates payments (general and water)
- body corporate fees
- the interest component of repayments of loans that were obtained for the purposes of purchasing or building
- rent payments
- house insurance costs
- repair and maintenance costs.

Net worth

Net worth is the value of a household's assets less the value of its liabilities. Net worth may be negative when household liabilities exceed household assets.

Owner (of dwelling)

A household in which at least one member owns the dwelling in which the household members usually reside. Owners are divided into two classifications - owners without a mortgage and owners with a mortgage. If there is any outstanding mortgage or loan secured against the dwelling the household is an owner with a mortgage. If there is no mortgage or loan secured against the dwelling the household is an owner without a mortgage.

Owner-occupied dwelling

A dwelling usually inhabited by its owner.

Public renter

A household paying rent to a state or territory housing authority/trust.

Quintiles

Groupings that result from ranking all households or people in the population in ascending order according to some characteristic such as their household income and then dividing the population into five equal groups, each comprising 20% of the estimated population.

Rent-free

Rent-free is a tenure arrangement where the unit (i.e. household, income unit or person) exchanges no money for lodging and is not an owner of the dwelling.

Renter

A household that pays rent to reside in the dwelling. See 'Landlord type' for further classification.

Salary sacrifice

An arrangement under which an employee agrees contractually to forgo part of their remuneration, which the employee would otherwise receive as wages and salaries, in return for the employer or

someone associated with the employer providing benefits of a similar value.

State/territory housing authority

A state/territory government authority which, under the Housing Assistance Act 1996 (Cwlth) and in accordance with a Commonwealth-State Housing Agreement, is charged with the provision of housing assistance.

Statistical Area Level 1

Statistical Areas Level 1 (SA1s) have been designed as the smallest unit for the release of Census data. SA1s generally have a population of 200 to 800 persons, and an average population of about 400 persons. They are built from whole Mesh Blocks and there are approximately 55,000 SA1s covering the whole of Australia.

Subsidised renter

A household renting its dwelling for less than it would be expected to pay in a commercial market. For the purpose of this study, subsidised renters are those households renting from a parent or other relative not living in the same household, an employer, or a housing cooperative or community/church group. However, some households in these categories were judged to be paying commercial rents; net imputed rent for such households was zero.

Tenure type

The nature of a household's legal right to occupy the dwelling in which the household members usually reside. Tenure is determined according to whether the household owns the dwelling outright, owns the dwelling but has a mortgage or loan secured against it, is paying rent to live in the dwelling, or has some other arrangement to occupy the dwelling.

Wealth

See Net worth.

Abbreviations

ABBREVIATIONS

The following symbols and abbreviations are used in this publication:

ABS	Australian Bureau of Statistics
ASGC	Australian Standard Geographical Classification
ASGS	Australian Statistical Geography Standard
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
Aust.	Australia
cat.	catalogue
CD	Collection District
Census	Census of Population and Housing
CURF	confidentialised unit record file
EDHI	equivalised disposable household income
HES	Household Expenditure Survey
incl.	including
ICLS	International Conference of Labour Statisticians
IRSAD	Index of Relative Socio-Economic Advantage and Disadvantage
MURF	main unit record file
no.	number
NSW	New South Wales
NT	Northern Territory
Qld	Queensland
RSE	relative standard error
SA	South Australia
SA1	Statistical Area 1
SEIFA	Socio-Economic Indexes for Areas
SIH	Survey of Income and Housing
Tas.	Tasmania
UNECE	United Nations Economic Commission for Europe
VGs	Valuers General
Vic.	Victoria

Appendix 1: Summary of steps to produce gross imputed rent (Appendix)

GROSS IMPUTED RENT FOR OWNER-OCCUPIED DWELLINGS

Produce base rental yields for owner-occupied dwellings in SIH 2011–12

Step 1.1 Calculate a preliminary rental yield for each SA1

This section summarises the methodology for producing base rental yields from the 2011 Census based on SA1. This process was repeated for the 2006 Census except that the geographical region was the Collection District (CD) instead of the SA1.

(a) Prepare Valuers General (VGs) dwelling sales data

Pool two years VGs data (2010-11, 2011-12)

Let i = dwelling in VGs data
PSA_i = sales price of ith dwelling in an SA1
NSA = total number of dwellings in an SA1

Then – Discard any SA1 where NSA < 5

– Calculate mean dwelling sales price ($\overline{PSA}$) for each remaining SA1 as:

$$\overline{PSA} = \left(\sum_{i=1}^{NSA} PSA_i \right) \Big/ NSA$$

(b) Prepare Census rental records

– Retain Census market rental records, discarding the dwellings for:

- owner-occupiers;
- residents living in caravan parks; and
- rental records out of scope of SIH (in very remote regions).

(c) Merge VGs and Census record dataset

– Attach respective $\overline{PSA}$ [from (a)] to each Census rental record [from (b)]
– Discard any Census records with no $\overline{PSA}$

(d) Calculate preliminary rental yield

Let j = rental dwelling in Census
R_j = weekly rent paid for j th dwelling
$\overline{PSA_j}$ = mean VGs dwelling price for SA1 of j th dwelling [from (c)]

Then – For each Census rental record, calculate preliminary rental yield (RY_j) as:

$$RY_j = R_j \Big/ \overline{PSA_j}$$

Step 1.2 Stratify Census rental records

– Define strata (s): state × section of state × number of bedrooms × dwelling type × Socio Economic Index for Areas, Index of Relative Socio Economic Advantage and Disadvantage (SEIFA IRSAD) quintile

– 100 strata created for each state; 70 strata for NT; and 55 strata for ACT; 725 in total across Australia (see Appendix 3)

Step 1.3 Estimate a final base rental yield for each stratum

Let RY_s = final base rental yield for a stratum s
Ns = total number of dwellings paying rent in a stratum s

Then – Calculate final base rental yield as median of preliminary rental yields for a stratum s,i.e.

$$RY_s = median(RY_{s1}, RY_{s2}, RY_{s3}, ...RY_{sNs})$$

Note: If N_s < 5 for any stratum, then the RY_s for another stratum with similar characteristics and geographic location is used

Produce base rental yields for owner-occupied dwellings in SIH 2005-06

– Repeat the same procedure outlined above for the Census 2006 file
– Smallest geographical area is Collection District (CD) instead of SA1

Estimate gross imputed rent for dwellings in base SIH cycles

Note: Base SIH cycles are those SIH conducted at around the same time as a Census, i.e. SIH 2005-06 and SIH 2011-12. The next base cycle will be SIH 2015-16 for the 2016 Census.

Let $GIROD_k$ = gross imputed rent for owner-occupied dwelling k
POD_k = SIH estimated sale price of owner-occupied dwelling k

Then – Calculate GIR for kth owner-occupied dwelling as its corresponding stratum rental yield (RY_s) multiplied by the SIH estimated sale price of kth dwelling belonging to stratum, i.e.

$$GIROD_k = RY_s \times POD_k$$

Produce intercensal rental yields for owner-occupied dwellings

Step 2.1 Calculate mean rental yields for each state/territory using SIH data

Let $\overline{RM}_t$ = mean rent paid by market renters in state/territory $t$in SIH

$\overline{POD}_t$ = mean estimated sale price of owner-occupied dwellings in state/territory $t$in SIH
– SIH 2005-06: base cycle for SIHs 2003-04, 2007-08 and 2009-10
– SIH 2011-12: base cycle for SIH 2013-14

Then – Calculate mean rental yield ($\overline{RY}_t$) for each state/territory t in intercensal SIH cycles (1) and base SIH cycles (0) as:

$$\overline{RY}_{t\,(1)} = \frac{\overline{RM}_{t\,(1)}}{\overline{POD}_{t\,(1)}} \quad \text{and} \quad \overline{RY}_{t\,(0)} = \frac{\overline{RM}_{t\,(0)}}{\overline{POD}_{t\,(0)}}$$

Step 2.2 Calculate rental yield adjustment factors for intercensal SIH cycles

– Calculate a rental yield adjustment factor (ARY_t) for each state/territory $t$and SIH cycle (from 2003-04 to 2013-14) as:

$$ARY_{t(1)} = \frac{\overline{RY}_{t\,(1)}}{\overline{RY}_{t\,(0)}}$$

Step 2.3 Calculate strata rental yields for intercensal SIH cycles

– Calculate an adjusted rental yield (RYA) for each SIH stratum (s) using final base rental yields (RY_s from step

1.3) and corresponding state/territory adjustment factor (ARY_t) (from step 2.2) as:

$$RYA_{t,s}(1) = RY_s(0) \times ARY_t(1)$$

Estimate gross imputed rent for intercensal SIH cycles

– Calculate gross imputed rent estimates for *k*th owner-occupied dwelling ($GIROD_k$) using adjusted rental yields ($RYA_{t,s}$) (from step 2.3) as:

$$GIROD_k(1) = RYA_{t,s}(1) \times POD_k(1)$$

GROSS IMPUTED RENT FOR OTHER TENURE TYPES

Estimate gross imputed rent for other tenure types

(a) Base SIH cycles

For the base SIH cycles, SIH 2005-06 and 2011-12:

Let $GIROT$ = gross imputed rent for other tenure type dwellings in each SIH
RM_s = rent paid by market renters in a given stratum (s) from Census
Ns = total number of market renters in a given stratum (s) from Census

– Using the same strata defined for owner-occupied dwellings (s) (see Appendix 3), impute market rent values for base cycles (0) by calculating the median market rent in stratum s from Census data, i.e.

$$GIROT(0) = median(RM_{s1}, RM_{s2}, RM_{s3}, ...RM_{sNs})$$

(b) Intercensal SIH cycles

Let $\overline{RM}_t$ = mean rent paid by market renters in state/territory t in SIH
ARM_t = market rent adjustment factor in state/territory t in SIH

Then – Calculate a market rent adjustment factor (ARM_t) for state/territory t in each intercensal SIH cycle (1) as:

$$ARM_t(1) = \overline{RM}_t(1) / \overline{RM}_t(0)$$

– Estimate intercensal gross imputed rent for other tenure type dwellings in SIH as:

$$GIROT(1) = GIROT(0) \times ARM_t(1)$$

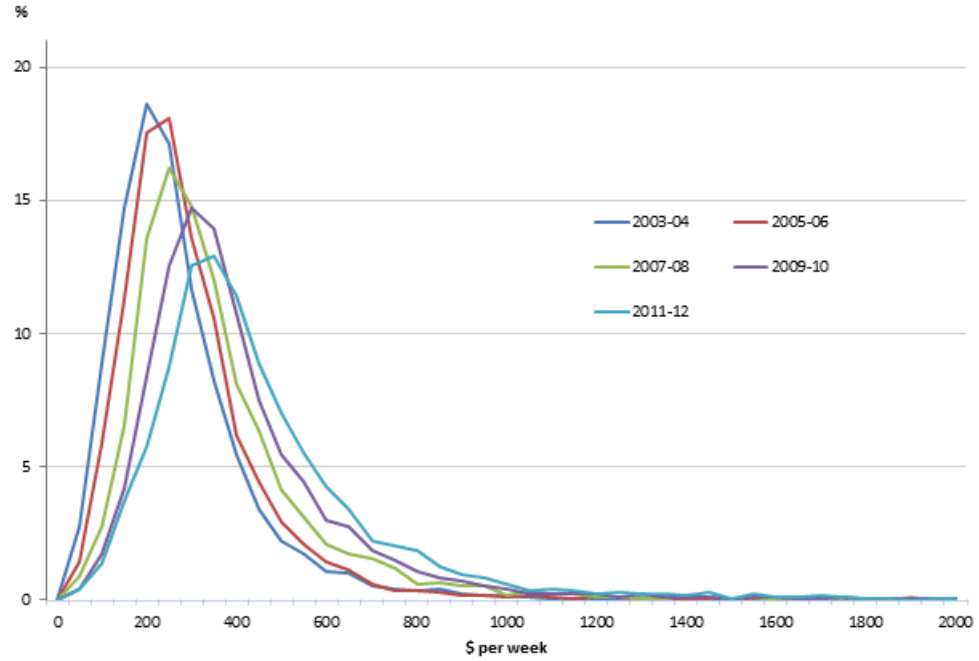
Appendix 2: Analysis of intercensal adjustment factors (Appendix)

ANALYSIS OF INTERCENSAL ADJUSTMENT FACTORS

As outlined in the Methodologies section of this publication, an adjustment factor has been developed to improve the estimation of changes in gross imputed rent over time. The relative change in mean market rents and the mean value of owner-occupied dwellings between each SIH cycle were used for the adjustment factor.

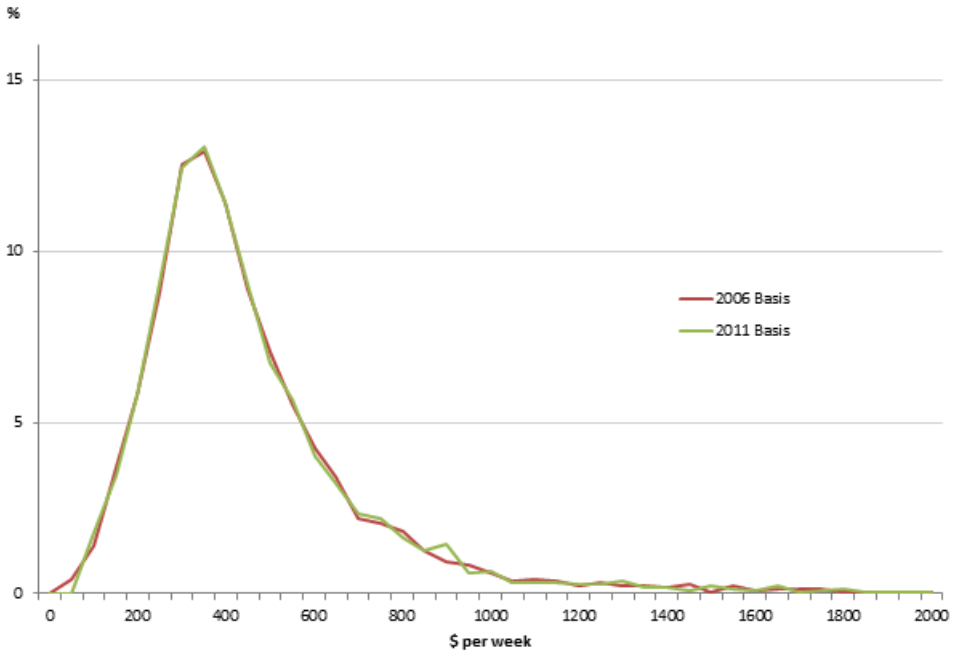
Graph 1 shows the impact of the adjustment factor on the distribution of gross imputed rent estimates for owner-occupied dwellings in current prices (i.e. not adjusted for changes in the Consumer Price Index). It shows a steady increase in rents over time.

Graph 1 Distribution of gross imputed rent for owner-occupied dwellings using rental yields from Census 2006 data



The adjustment factors derived from SIH data were validated by comparing the gross imputed rent estimates for SIH 2011–12 when they were calculated using 2011 Census data and those calculated using Census 2006 data extrapolated forward. As shown in Graph 2, the two results for the period are consistent.

Graph 2 Distribution of SIH 2011–12 gross imputed rent for owner-occupied dwellings, using rental yields from Census 2006 (extrapolated) and Census 2011 data



Appendix 3: Gross imputed rent strata on the main unit record file (MURF) and the CURFs (Appendix)

GROSS IMPUTED RENT STRATA ON THE MAIN UNIT RECORD FILE AND CONFIDENTIALISED UNIT RECORD FILES

The ABS's internal Main Unit Record File (MURF) uses the most comprehensive stratification for producing the new experimental gross imputed rent estimates for households. For each of the six Australian states, there was sufficient sample to create 100 strata (table A1), for the two Australian territories, there was insufficient sample to use the detailed Section of State classification. Two groupings were used for the Northern Territory resulting in 70 strata (table A2) and for the Australian Capital Territory there was only one grouping, resulting in 55 strata (table A3).

Detailed geographical location of individual records is not included on the Basic and Expanded Confidentialised Unit

Record Files (CURFs). Therefore, the gross imputed rent estimates based on the new methodology for these files only use data available on the respective CURFs. Analysts can use this information to recompile the gross imputed rent on the CURFs for 2003–04 to 2011–12 (tables B1 and B2).

A. Strata for gross imputed rent on Main Unit Record File (MURF)

Table A1. Strata for NSW, Vic., Qld, SA, WA and Tas. for each SEIFA IRSAD quintile(a)

Section of state	Dwelling	Number of bedrooms
Major Urban	Separate house	1 and 2
Major Urban	Separate house	3
Major Urban	Separate house	4
Major Urban	Separate house	5 or more
Major Urban	Semi-detached	1
Major Urban	Semi-detached	2
Major Urban	Semi-detached	3
Major Urban	Flat, unit or apartment	1
Major Urban	Flat, unit or apartment	2
Major Urban	Flat, unit or apartment	3
Major Urban	Semi-detached; flat, unit or apartment	4 or more
Other Urban	na	1 and 2
Other Urban	na	3
Other Urban	na	4 or more
Bounded Locality	na	1 and 2
Bounded Locality	na	3
Bounded Locality	na	4 or more
Rural Balance	na	1 and 2
Rural Balance	na	3
Rural Balance	na	4 or more

(a) Total of 100 strata in each state
na not applicable

Table A2. Strata for NT for each SEIFA IRSAD quintile(a)

Section of state	Dwelling	Number of bedrooms
Major Urban and Other Urban	Separate house	1 and 2
Major Urban and Other Urban	Separate house	3
Major Urban and Other Urban	Separate house	4
Major Urban and Other Urban	Separate house	5 or more
Major Urban and Other Urban	Semi-detached	1
Major Urban and Other Urban	Semi-detached	2
Major Urban and Other Urban	Semi-detached	3
Major Urban and Other Urban	Flat, unit or apartment	1
Major Urban and Other Urban	Flat, unit or apartment	2
Major Urban and Other Urban	Flat, unit or apartment	3
Major Urban and Other Urban	Semi-detached; flat, unit or apartment	4 or more
Bounded Locality and Rural Balance	na	1 and 2
Bounded Locality and Rural Balance	na	3
Bounded Locality and Rural Balance	na	4 or more

(a) Total of 70 strata in NT
na not applicable

Table A3. Strata for ACT for each SEIFA IRSAD quintile(a)

Section of state	Dwelling	Number of bedrooms
na	Separate house	1 and 2
na	Separate house	3
na	Separate house	4
na	Separate house	5 or more
na	Semi-detached	1
na	Semi-detached	2
na	Semi-detached	3
na	Flat, unit or apartment	1
na	Flat, unit or apartment	2
na	Flat, unit or apartment	3
na	Semi-detached; flat, unit or apartment	4 or more

(a) Total of 55 strata in ACT
na not applicable

B. Strata for gross imputed rent on Confidentialised Unit Record Files (CURFs)

Table B1. NSW, Vic., Qld, SA, WA and Tas. (total 22 strata per state)

Area of usual residence	Dwelling	Number of bedrooms
Capital City	Separate House	1 and 2
Capital City	Separate House	3
Capital City	Separate House	4
Capital City	Separate House	5 or more
Capital City	Semi-detached	1
Capital City	Semi-detached	2
Capital City	Semi-detached	3
Capital City	Flat, unit or apartment	1
Capital City	Flat, unit or apartment	2
Capital City	Flat, unit or apartment	3
Capital City	Semi-detached; flat, unit or apartment	4 or more
Balance of State	Separate House	1 and 2
Balance of State	Separate House	3
Balance of State	Separate House	4
Balance of State	Separate House	5 or more
Balance of State	Semi-detached	1
Balance of State	Semi-detached	2
Balance of State	Semi-detached	3
Balance of State	Flat, unit or apartment	1
Balance of State	Flat, unit or apartment	2
Balance of State	Flat, unit or apartment	3
Balance of State	Semi-detached; flat, unit or apartment	4 or more

Table B2. NT and ACT (Expanded CURF), and combined NT and ACT (Basic CURF) (total 11 strata per territory)

Area of usual residence	Dwelling	Number of bedrooms
na	Separate House	1 and 2
na	Separate House	3
na	Separate House	4
na	Separate House	5 or more
na	Semi-detached	1
na	Semi-detached	2
na	Semi-detached	3
na	Flat, unit or apartment	1
na	Flat, unit or apartment	2
na	Flat, unit or apartment	3
na	Semi-detached; flat, unit or apartment	4 or more

na not applicable